



Food and Agriculture
Organization of the
United Nations

20th Working Session of the
Intergovernmental
Technical Panel on Soils
(ITPS)

Global Soil Laboratory Network (GLOSOLAN): progress report

19-21 March 2024

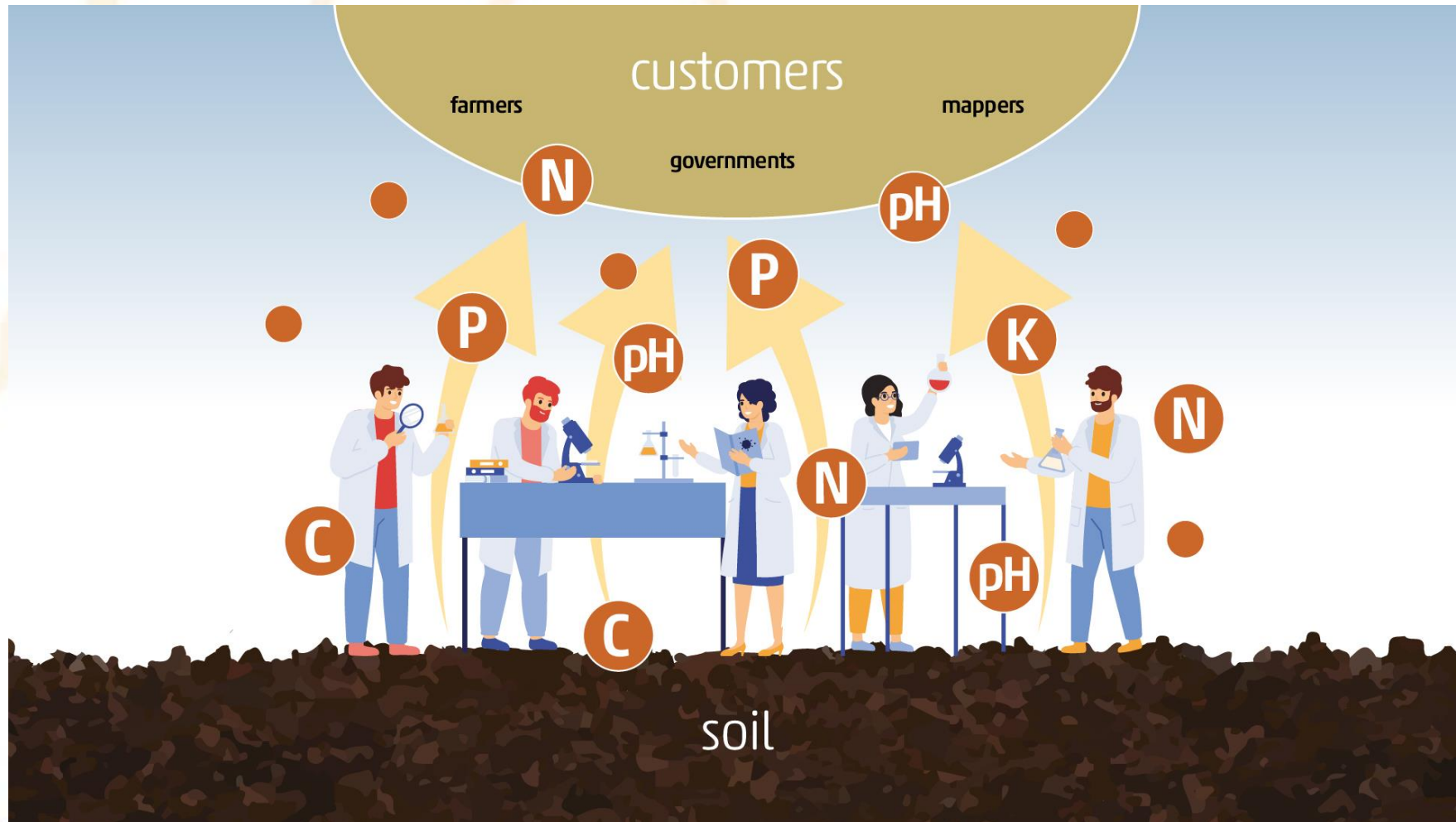
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INTERGOVERNMENTAL
TECHNICAL PANEL ON SOILS

Filippo Benedetti
GLOSOLAN Coordinator



Soil laboratories: where soil samples become data



GLOSOLAN: bringing soil laboratories to the forefront worldwide since 2017



Currently grouping together around 1050 soil testing institutions from around 160 countries



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We operate at all levels...

- Overall coordination: Yuxin tong
- GLOSOLAN Coordinator: Filippo Benedetti
- GLOSOLAN-Spec Coordinator: Yi Peng
- Additional support from the Secretariat: Bellington Mudyawabikwa
- GLOSOLAN Chair: Elh Moudi Moustapha Abdourahaman (Niger)
- GLOSOLAN vice-Chair: Ms Hanane Aroui Boukbida (France)
- Members of the Steering Committee:
 - Miriam Ostinelli (Argentina)
 - Rob de Hayr (Australia)
 - Christian Hartmann (France)
 - Rolf Mabicka Obame (Gabon)
 - Elena Shamrikova (Russian Federation)
 - **Nopmanee Suvannang (Thailand)**
 - Fenny van Egmond (The Netherlands)
 - Rich Ferguson (United States of America)



GLOBAL

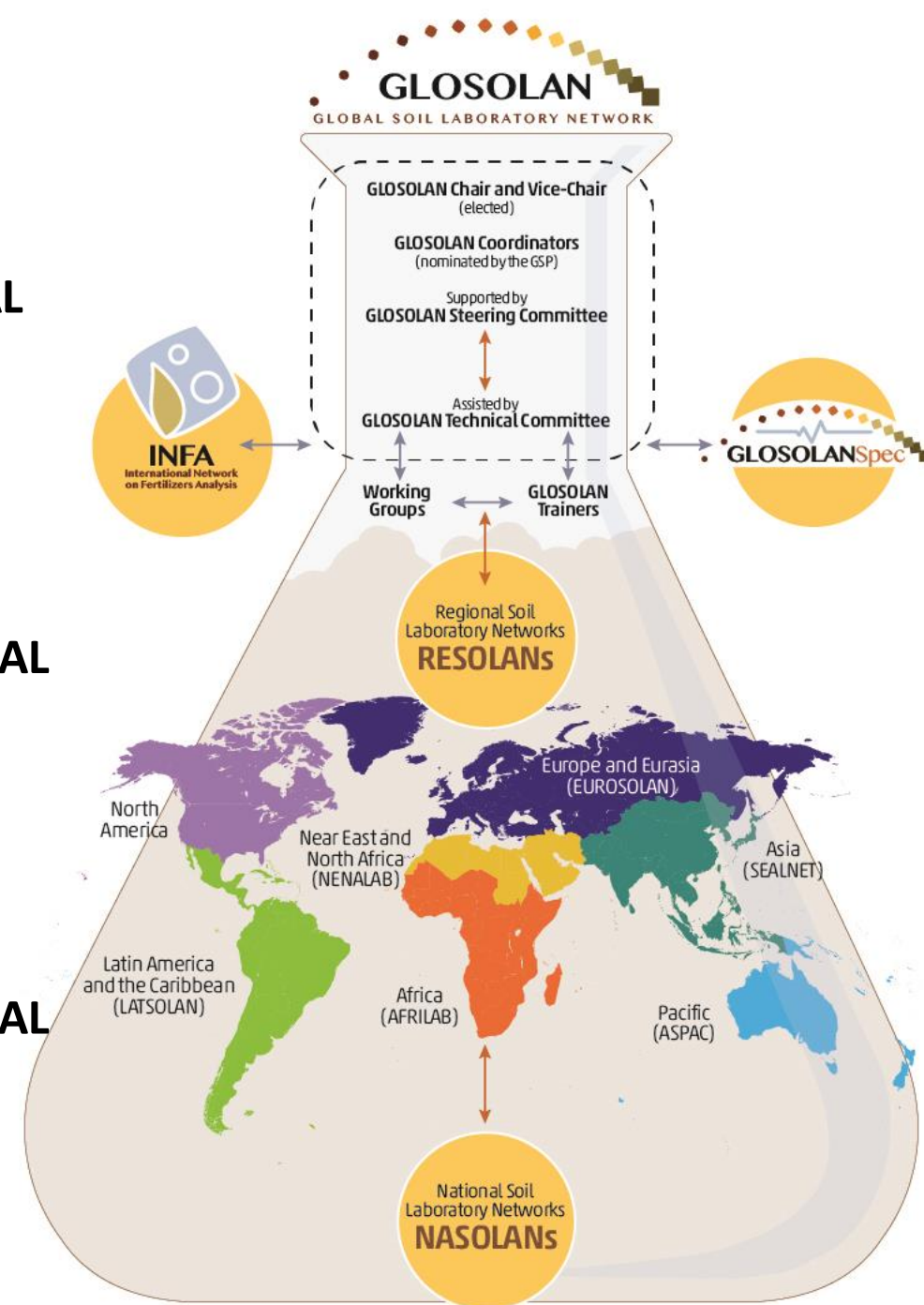


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Collaborative and
participative
approach...



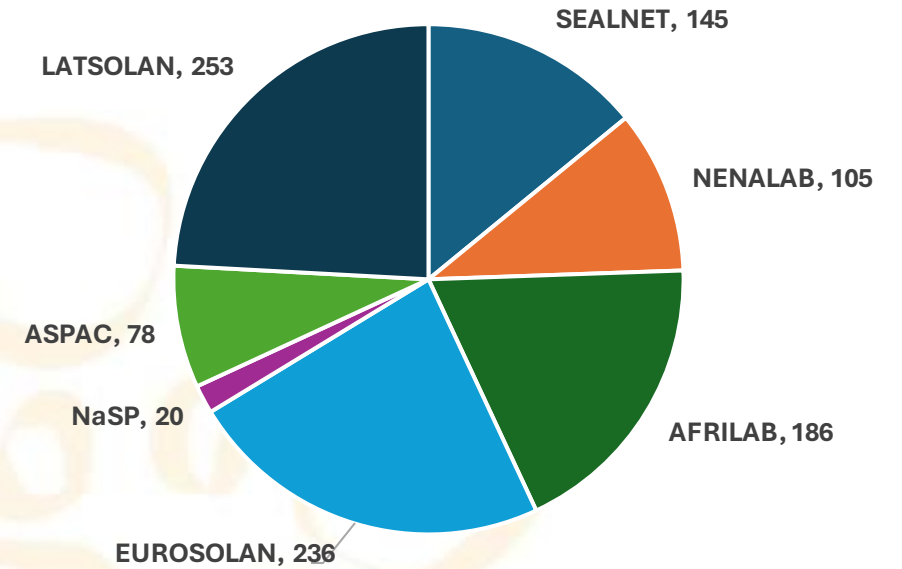
... where the most advanced laboratories help those who need to improve

Status of GLOSOLAN

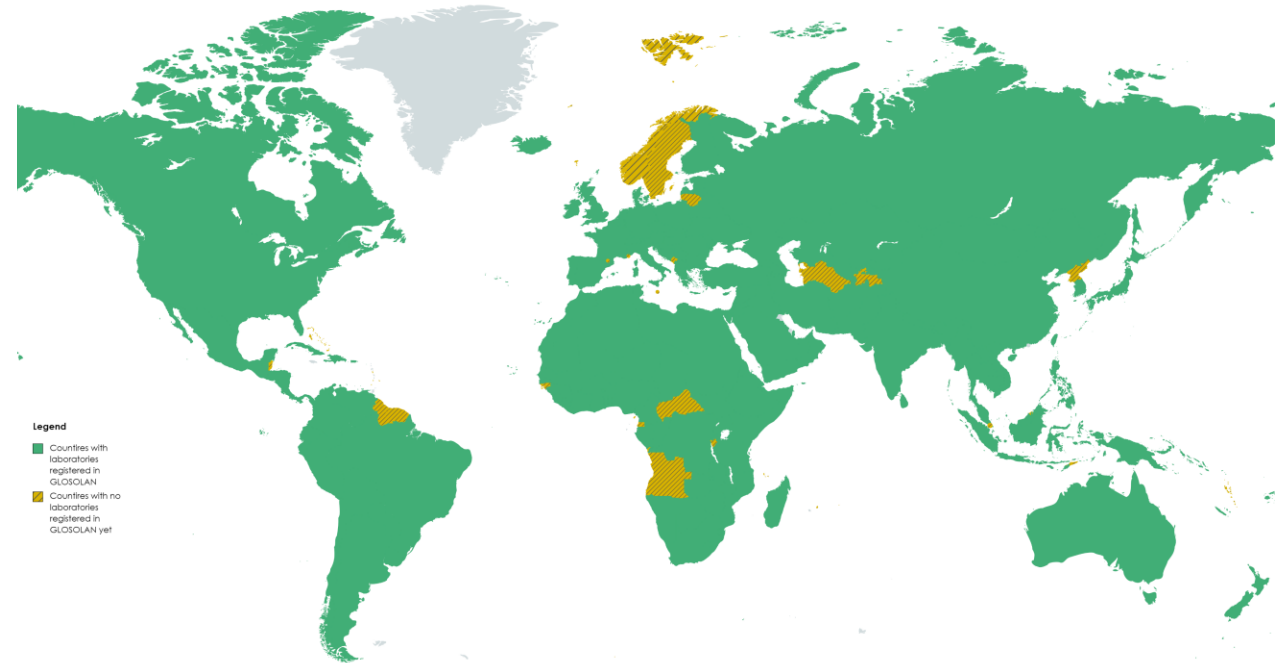
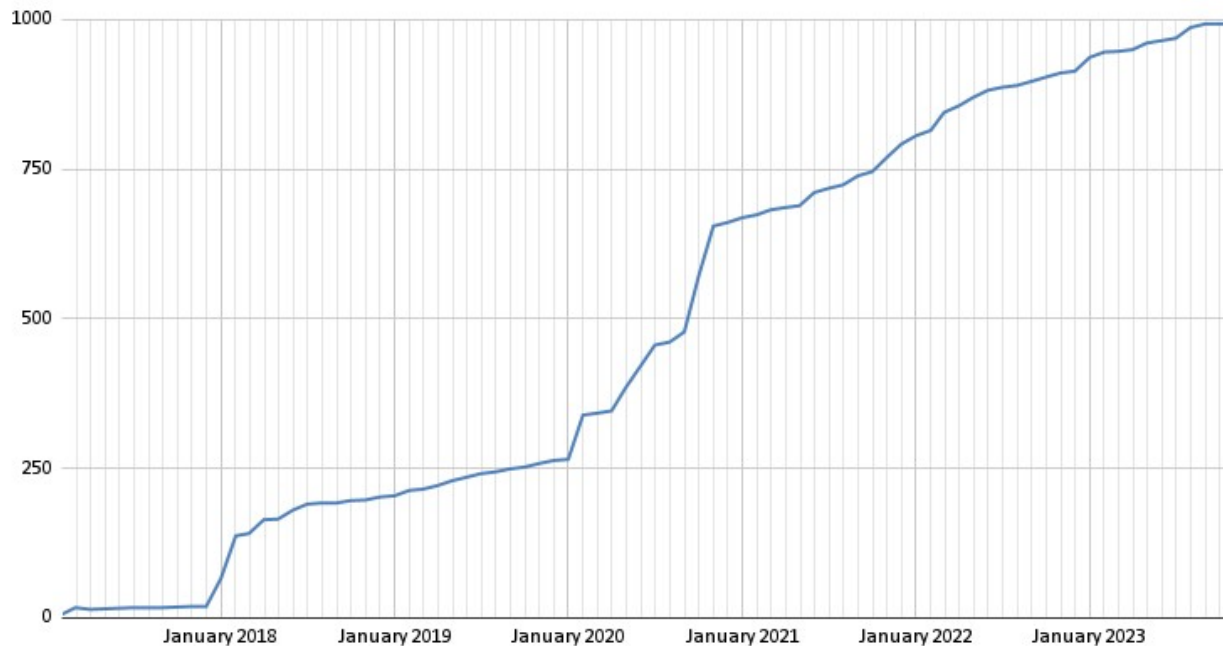
Currently around 1050 registered soil laboratories from 160 countries

(→ around **3 000** lab heads and technicians involved)

GLOSOLAN participation by region



GLOSOLAN growth



Harmonization of Standard Operating Procedures (SOPs)



Globally harmonized protocols, with a bottom-up, collaborative and inclusive approach

- Include step-by-step instructions, sections on health and safety, quality assurance and control (QA/QC)
- Contribute to the replicability of an analysis and to the quality and reliability of the data
- Available online, for free and in several languages

New SOPs published in the last months:

- Soil moisture by gravimetric method
- Bulk density
- Microbial biomass: chloroform fumigation-extraction method

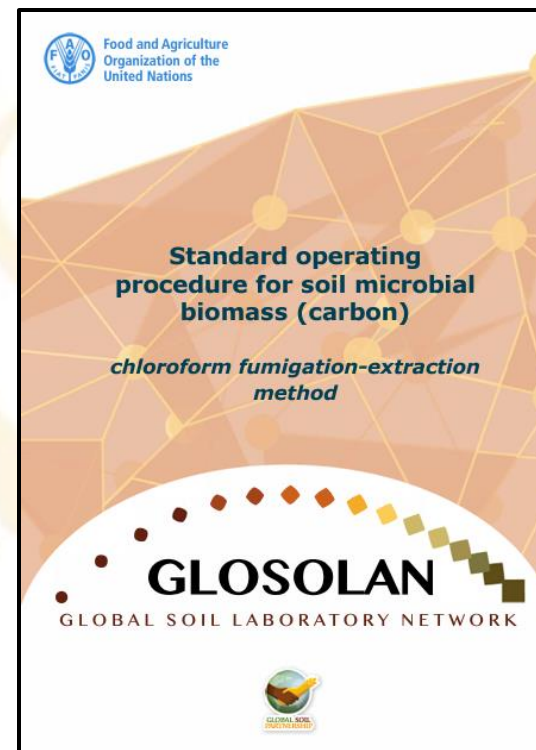
Under publication:

- Boron by hot water extraction
- pH v2.0

Under final review:

- Particulate organic carbon
- Enzymes

Experts from the other GSP Technical Networks supported the harmonization and review of the SOPs from joint working groups



Going back to the lab: regional in-person trainings

- **AFRILAB:** Dakar (Senegal) 23-27 October 2023
Over 80 soil laboratory technicians from 40 Sub-Saharan countries
- **LATSOLAN:** Santiago and Chillan (Chile) 8-11 April 2024
Representatives from 30 countries from Central America, South America and the Caribbean
- **EUROSOLAN:** Georgia (May 2024) – TBC
- **SEALNET:** Philippines 24-28 June 2024 - TBC



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Ongoing and future inter-laboratory proficiency tests (PTs)

- Launch of 3 regional PTs in 2023-24:
 - **Eurasia** (led by RUSOLAN, thanks to the support of PhosAgro) – Main topic: CARBON
 - **Asia** (led by the BSWM - Philippines): C, pH, N, P, K, particle size distribution
 - **Africa+NENA** (thanks to the support of BGS and IRD)
- Launch of several national PTs
- Launch of a **global GLOSOLAN PT in 2024** (expectations: over 250 labs participating)

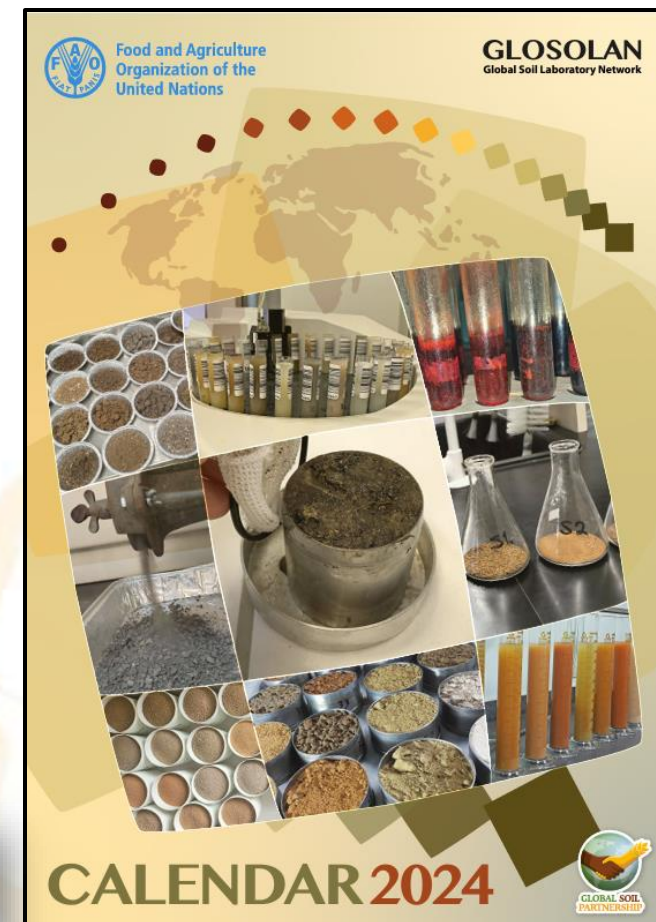


Exchange of soil samples for scientific purposes remains a major issues in many countries

- High-performing laboratories have a key role to play in helping and training less successful laboratories on a regular basis
- GLOSOLAN will continue building the capacity of countries to organize PTs and will facilitate the organization of regional/global PTs

Other recent activities

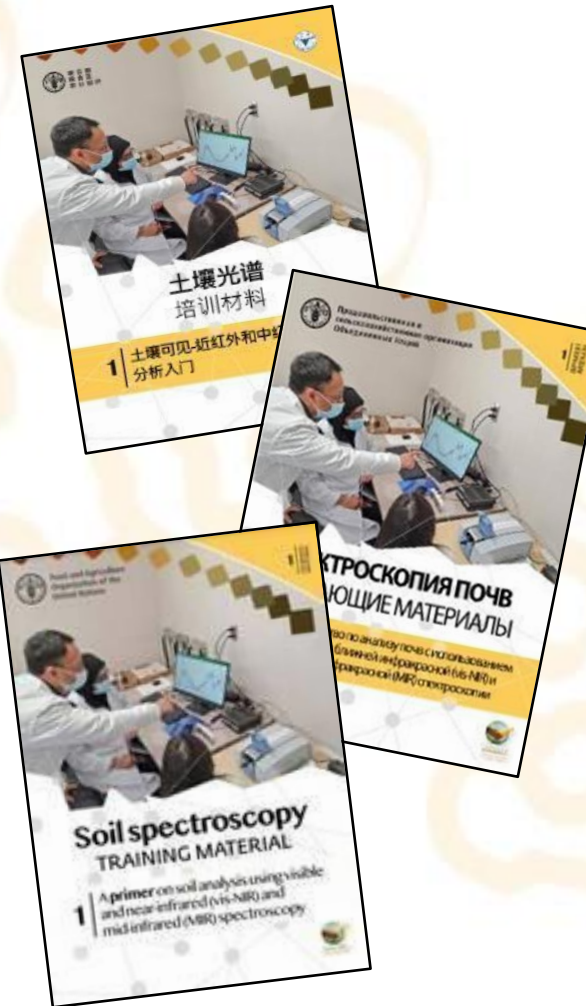
- GLOSOLAN calendar
- **Global assessment** of laboratory capacities and needs 2024
- Delivery of personal protection equipment (**PPE**) to laboratories
- Laboratory Information Management Systems (**LIMS**)
- Guidelines on **reagents disposal**
- 2024 **webinar** series



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News from the GLOSOLAN initiative on soil spectroscopy (GLOSOLAN-Spec)

- **Primer for soil spectroscopy:** to introduce theory and concepts of soil spectroscopy at the beginner level
Available in: English, Chinese, French, Russian, Spanish (launch in April)
- **Primer volume 2**
Advanced Soil Analysis: Mastering Chemometric Modeling with R and Spectroscopy
- **3 SOPs (joint publication with IAEA)** for:
 - Soil spectroscopy measurement
 - Sample preparation
 - Quality control
- **Webinars** with spotlight on state-of-art, research and discussion



UPCOMING TRAININGS

- Artificial intelligence and machine learning in soil spectroscopic modelling
 - Artificial intelligence and machine learning in soil spectroscopic modelling
5 July 2023 | 9:00 CEST
 - SPEAKERS: Zefang Shen and Raphael Viscarra Rossel
 - LANGUAGE: English
 - [Details of the event](#) | [REGISTRATION](#)

PAST TRAININGS

- Soil Spectroscopy and Deep Learning-based modeling for decision-making in agricultural contamination
 - Soil Spectroscopy and Deep Learning-based modeling for decision-making in agricultural contamination
3 March 2023 | 15:00 CEST
 - SPEAKER: Franck Albinet
 - LANGUAGE: English
 - [Details of the event](#) | [WATCH the RECORDING](#) | [DOWNLOAD the PRESENTATION](#)
- Towards operational large-scale soil spectral libraries
 - Towards operational large-scale soil spectral libraries
11 October 2022 | 14:30 CEST
 - SPEAKER: Leonardo Ramirez-Lopez
 - LANGUAGE: English
 - [Details of the event](#) | [Presentation \(available soon\)](#) | [Video recordings](#)
- Soil sample preparation for MIR measurement. Is fine grinding necessary for accurate MIR predictions?
 - 07 September 2022 | 16:00 CEST
 - SPEAKER: Dr Nuwan Wijewardane
 - LANGUAGE: English
 - [Details of the event](#) | [Presentation](#) | [Video recordings](#)
- Interpretation of mid infrared spectra of soil - Direct use of spectra to provide new insights

Joint work with other GSP Tech. Networks

- Review GLOSOLAN SOPs (biological parameters, salt-affected soils related parameters, heavy metals and pollutants)
- Develop technical documents (e.g., guidelines on reagents disposal)
- Organize together workshop and webinars
- Experts from GLOSOLAN to help other GSP Technical Networks to develop SOPs (e.g. INSOP, INSOILFER) and organize workshop together



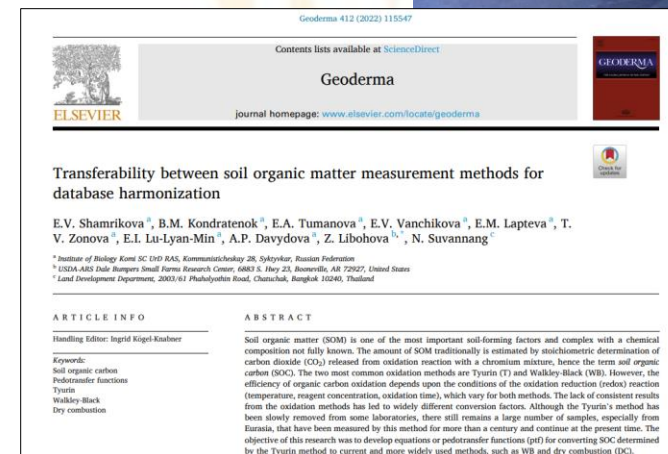
Involvement in other GSP initiatives and programs

- RECSOIL (e.g., lab training in Togo)
- SOILCARE
- SoilFER



Reporting to international fora

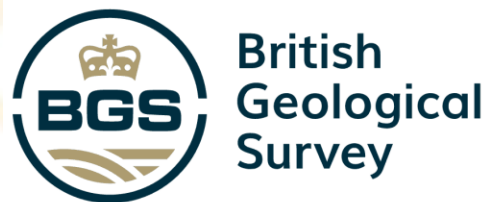
- Symposium on earth observation for soil protection and restoration (European Space Agency) – March 2024
- IUSS Centennial – May 2024
- International Governance Committee (**IGC**) for the International Symposium on Soil and Plant Analysis (**ISSPA**)
- Publication on **scientific journals** (PT outcomes, transfer functions, etc.)



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Thanks to the kind support of



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Thank you

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